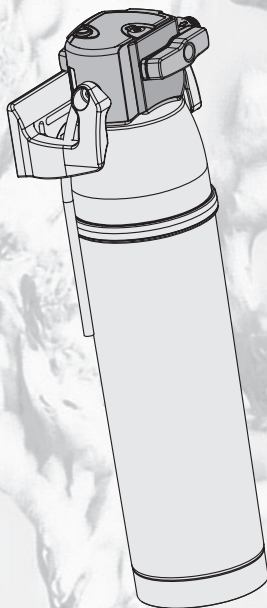


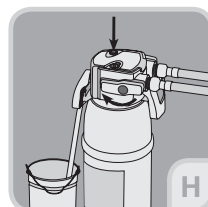
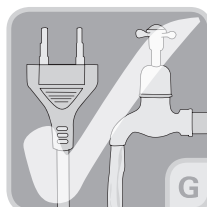
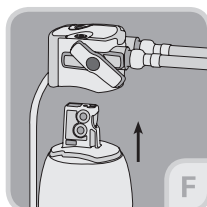
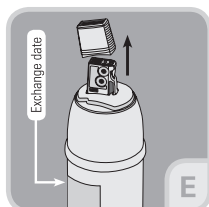
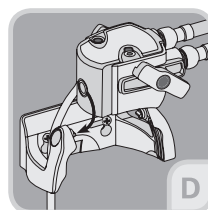
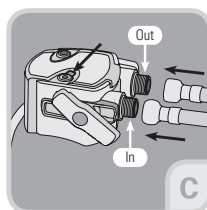
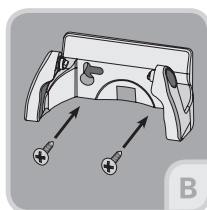
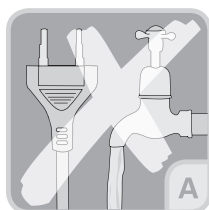
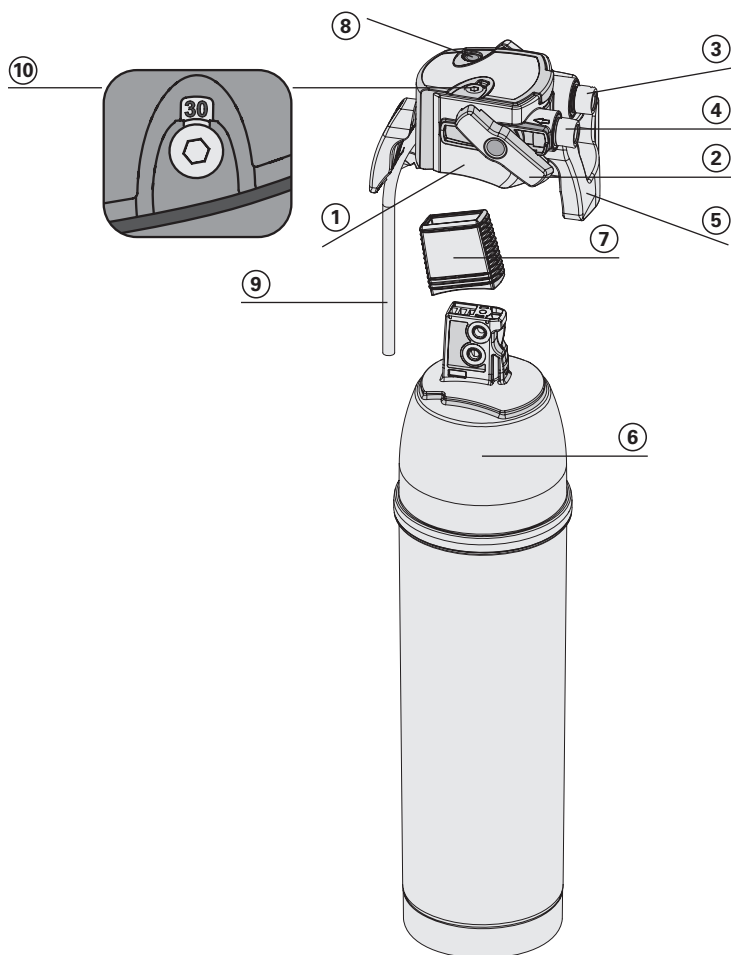
# PURITY C

## Water Filter System



### Manual

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# 1 Definition of Terms

All filter head types:

- ① Filter head
- ② Locking handle
- ③ Water outlet 3/8" – 18 NPT
- ④ Water inlet 3/8" – 18 NPT
- ⑤ Wall mount
- ⑥ Filter cartridge
- ⑦ Protective cap
- ⑧ Flush valve
- ⑨ Flush hose

Additional for filter head types PURITY C 0–70%:

- ⑩ By-pass setting

## 2 General Information

### 2.1 Function and Application

MAVEA PURITY C is a filter system specially designed for use in food and beverage environments to ensure consistently high water quality for individual customer applications as well as reliable and simple operation.

The unique IntelliBypass ensures a constant by-pass proportion for the entire usage period, irrespective of the volumetric flow of the terminal equipment used. The result is consistently high water quality specially tailored to the requirements of the application and the local water conditions.

By reliably locking the filter cartridge in the filter head and controlling the water flow, the innovative locking handle ensures simple and reliable operation.

The filter cartridges of the PURITY C50/150/300 Quell ST system reduce the carbonate hardness\* in drinking water, thus preventing limescale deposits in the downstream terminal equipment. Using the flow method, calcium\*, magnesium ions\* and heavy metal ions\* (e.g. lead and copper) are selectively reduced from the drinking water via an ion exchanger. Furthermore, the filter material binds contents that impair odor and taste (i.e. chlorine residues in the filtrate and the by-pass water), as well as organic impurities\* and cloudiness\*.

Typical applications for PURITY C50/150/300 Quell ST include coffee and espresso machines, hot and cold drinks machines as well as combi steamers and conventional ovens.

\* Not performance tested or certified by NSF.

### 2.2 Guarantee Provisions

The PURITY C filter system is subject to the guarantee of 2 years. A guarantee claim may be asserted only if all instructions in this handbook are followed and observed.

## **2.3 Storage/Transport**

Adhere to the ambient conditions in the Technical Data (Chapter 9) for storage and transport.

The handbook should be retained for use with the product, kept for the whole service life of the filter system and passed on to subsequent owners.

## **2.4 Recycling/Disposal**

By disposing of this product and its packaging in the correct manner you are helping to prevent potential negative impacts on people and the environment that could be caused by incorrect disposal. Comply with local regulations and bring the units to be disposed of to a proper recycling facility at the collection points provided.

Used filter cartridges can be returned to MAVEA LLC (see back of the cover) or disposed of according to local regulations.

# **3 Operating and Safety Information**

## **3.1 Qualified Personnel**

Installation and maintenance of the filter system may be carried out only by trained or authorized personnel.

## **3.2 Correct Use**

Proper operation of the filter system is subject to the installation, use and maintenance described in this manual.

## **3.3 Liability Exclusion**

Installation must be performed precisely in accordance with the instructions in this manual. Neither MAVEA LLC nor any affiliated company shall be held liable for any kind of damage, including direct and indirect and subsequent damage and loss of profit, arising from the incorrect installation or use of product.

## **3.4 Specific Safety Information**

- Only water of drinking water quality may be used as intake water for the PURITY C water filter system. The PURITY C water filter system is only suitable for cold water use within the water intake temperature range stated in Chapter 9. No microbiologically impaired water or water of unknown quality may be used without appropriate disinfection.
- If there are official instructions to boil tap water, the filter system must be decommissioned. When the requirement to boil water comes to an end, the filter cartridge must be replaced and the connections cleaned.
- For hygienic reasons, the filter material of the cartridge is subjected to a special treatment with silver. A small quantity of silver, which is harmless to health, may be released into the water. This is in compliance with the World Health Organization (WHO) recommendations for drinking water.
- It is generally recommended to boil tap water for certain groups of people (e.g. people with weakened immune systems, babies). This also applies to filtered water.
- Note for people with kidney disease or dialysis patients: during the filter process, the potassium content may be increased slightly. If you suffer from kidney disease and/or have to stick to a special potassium diet, we recommend prior agreement with your doctor.

**MAVEA LLC** recommends that the filter system not be left unused for a long period. If the PURITYC filter system is not used for several days (2–3 days), we recommend that the filter system be flushed with the flushing volume X indicated in the table below. After periods of non-use of over 4 weeks, the filter should be flushed with flushing volume Y or else replaced. Please also note that the maximum usage period of the filter cartridge is 12 months (Chapter 6).

Filter cartridge	Flushing volume X after 2–3 days non-use	Flushing volume Y after 4 weeks non-use
PURITY C50 Quell ST	2 liters (0.5 US gallons)	20 liters (5.3 US gallons)
PURITY C150 Quell ST	3 liters (0.8 US gallons)	30 liters (7.9 US gallons)
PURITY C300 Quell ST	6 liters (1.6 US gallons)	60 liters (15.9 US gallons)

- The filter system must not be opened or dismantled during operation. The filter cartridge must not be opened.
- The filter system filter head is designed for a service life of 10 years counted from the date of installation. It must be replaced after 10 years.
- Production date

Production code filter head – example: H 8252 11882	
8	Production year, here: 2008
25	Production week, here: calendar week 25
2	Production day from Monday (1) to Friday (5), here: Tuesday
11882	Consecutive identification number

Production code filter cartridge – example: B8252080010	
8	Production year, here: 2008
25	Production week, here: calendar week 25
2	Production day from Monday (1) to Friday (5), here: Tuesday
08	Batch No. filter medium, here in terms of quantity the eighth batch used
0010	Consecutive number of the filter cartridge, here the tenth cartridge; reset when the day changes

### 3.5 Technical Safety Assembly Instructions

- The terminal equipment operated with the filter must be free of limescale prior to installation.
- Protect the filter system from sunlight and mechanical damage. Do not assemble near sources of heat and open flames.
- A stop valve must be installed before the filter system intake hose.
- If the water pressure is higher than 8.6 bar (125 psi), a pressure reducer must be installed in front of the filter system.
- The filter head may be connected to the mains only with a non-return valve according to EN 13959 or higher quality protection against return flows (see Chapter 10).
- No copper pipes and no galvanized or nickel-plated pipes/connectors may be installed between the water filter and consumer. When choosing the material for parts that come into contact with water after the MAVEA filter system it must be remembered that, due to the process, decarbonized water contains free carbon dioxide.
- All parts must be installed in accordance with the country-specific requirements on the installation of drinking water facilities.

## 4 Installation

**⚠ Caution:** Prior to installation, read the Technical Data (Chapter 9) and the Operating and Safety Information (Chapter 3). After storage and transport below 0°C (32°F) the product must be stored in the open original packaging for at least 24 hours at the stated ambient temperatures (Chapter 9) for operation.

#### 4.1 Assembling the Filter Head, Water Connection

**⚠ Caution:** Ensure that the locking handle on the head is open.

- (A)** • Close water intake and switch off power supply to the terminal equipment.
- Fit the wall mount **(5)** at the intended position.
- (B)** **⚠ Caution:** During assembly, note the installation dimensions, bending radii of the hoses and dimensions of the accessories. The system can be operated vertically and horizontally. When using the wall mount, install vertically only!
- (C)** • Fit the hoses at the water inlet "IN" **(4)** and outlet "OUT" **(3)** of the filter head **(1)**.
- (D)** **⚠ Caution:** The max. tightening torque at the connections must not exceed 14 Nm!
  - Check by-pass setting **(10)** and, if necessary, adjust to local carbonate hardness (Chapter 4.2).
  - Note:** The by-pass has been factory set at 30%.
  - Engage the filter head **(1)** in the wall mount **(5)**.

#### 4.2 Setting By-Pass and Capacity

- Identify the carbonate hardness of the local water using the MAVEA carbonate hardness test (Art. 710800). Alternatively, the local water supplier will provide information on carbonate hardness.
- Determine the by-pass setting and capacity according to the application and the carbonate hardness identified using the by-pass and capacity tables (Chapter 6).
- Then turn the by-pass setting **(10)** to the identified value.  
**Note:** Only the PURITY C 0–70% filter head has a variable by-pass setting. The PURITY C 30% filter head has a fixed bypass setting of 30%.

#### 4.3 Inserting the Filter Cartridge

- (E)** • Remove protective cap **(7)**.
- Note the next exchange date in the date field on the filter cartridge **(6)**.
- (F)** • Insert the filter cartridge **(6)** vertically in the filter head **(1)**.  
**⚠ Caution:** The filter cartridge can only be inserted when the locking handle is open.
- Make sure that the filter cartridge is positioned correctly.
- Turn the locking handle **(2)** until you feel it engage.

#### 4.4 Commissioning

- (G)** • Open the water intake and switch on the power supply of the terminal equipment.
- Operate the flush valve **(8)** and filter system until the filtered water runs clear and without bubbles. At least the flushing volume X must be flushed (see table in chapter 3.4).
- (H)** **Note:** When bleeding/flushing, catch water emerging from the flush hose **(9)** in an appropriate container.
- Check system for any leaks.

### 5 Exchanging the Filter Cartridge

The filter cartridge must be replaced after 6–12 months, at the latest 12 months after commissioning, irrespective of the level of exhaustion of the filter system. If the capacity of the filter cartridge has already been exhausted (Chapter 6), it must be exchanged earlier.

**⚠ Caution:** During the exchange, carefully examine all dismantled parts! Faulty parts must be exchanged and dirty parts should be cleaned. Read the Operating and Safety Information (Chapter 3) prior to exchange. After storage and transport below 0°C (32°F) the filter head and filter



cartridge must be stored in the open original packaging for at least 24 hours at the stated ambient temperatures (Chapter 9) for operation.

**Note:** When the locking handle is open, the water supply to the cartridge is interrupted and short-circuit operation with direct water flow from the water inlet ④ to the outlet ③ is possible (if necessary, close the water supply and switch off the power supply to the downstream appliance).

- Open locking handle ②.
- Activate the flush valve ⑧ and remove pressure from the system.
- Remove exhausted filter cartridge ⑥ from the filter head ①.

**Note:** The filter cartridge can be pivoted by 90° in the wall mount for easy removal.

- Perform the steps described at 4.3 and 4.4.

## 6 By-Pass and Capacity Tables

The stated capacities are guide values that, depending on the product volume flow, local water quality and machine type can vary by +/- 20%. We are happy to advise on individual requirements! The capacities shown in the following tables are based on German carbonate hardness and are not certified by NSF.

### 6.1 Filter Heads PURITY C 0–70% with Variable By-Pass

Coffee and Espresso Machines/Vending Machines

German carbonate hardness °dH	Grains per US gallon	By-pass setting	Filter capacity					
			PURITY C50 Quell ST		PURITY C150 Quell ST		PURITY C300 Quell ST	
			Liters	US gallons	Liters	US gallons	Liters	US gallons
4	4	70%	1000	264	3000	793	6000	1585
5	5	70%	1000	264	3000	793	6000	1585
6	6	60%	1000	264	3000	793	6000	1585
7	7	60%	1000	264	3000	793	6000	1585
8	8	50%	1000	264	2500	660	5000	1321
9	9	50%	800	211	2000	528	4000	1057
10	10	40%	600	159	1700	449	3400	898
11	11	40%	500	132	1500	396	2900	766
12	12	30%	450	119	1300	343	2500	660
13	13	30%	400	106	1200	317	2300	608
14	14	30%	360	95	1100	291	2100	555
15	15	30%	340	90	1000	264	1900	502
16	16	30%	320	85	900	238	1800	476
17	17	30%	300	79	850	225	1600	423
18	18	30%	280	74	800	211	1500	396
19	19	20%	260	69	750	198	1400	370
20	20	20%	240	63	700	185	1300	343
21	21	20%	220	58	650	172	1200	317
22	22	20%	210	55	620	164	1150	304
23	23	20%	200	53	590	156	1100	291
24	24	20%	190	50	560	148	1060	280
25	25	20%	180	48	540	143	1020	269
26	26	20%	170	45	520	137	990	262
27	27	20%	165	44	500	132	960	254
28	28	20%	160	42	480	127	930	246
29	29	20%	155	41	460	122	900	238
30	30	20%	150	40	440	116	870	230
31	31	20%	145	38	430	114	840	222
32	32	20%	140	37	420	111	810	214
33	33	20%	135	36	410	108	790	209
34	34	20%	130	34	400	106	770	203
35	35	20%	125	33	390	103	750	198

## Combi Ovens and Conventional Ovens

German carbonate hardness °dH	Grains per US gallon	By-pass setting	Filter capacity					
			PURITY C50 Quell ST		PURITY C150 Quell ST		PURITY C300 Quell ST	
			Liters	US gallons	Liters	US gallons	Liters	US gallons
4	4	10%	1000	264	3000	793	6000	1585
5	5	10%	800	211	2500	660	5000	1321
6	6	10%	600	159	2100	555	4000	1057
7	7	10%	550	145	1800	476	3500	925
8	8	10%	500	132	1600	423	3000	793
9	9	10%	450	119	1400	370	2700	713
10	10	10%	400	106	1200	317	2400	634
11	11	10%	370	98	1100	291	2200	581
12	12	10%	340	90	1000	264	2000	528
13	13	10%	310	82	950	251	1800	476
14	14	10%	290	77	900	238	1700	449
15	15	10%	270	71	850	225	1600	423
16	16	10%	250	66	800	211	1500	396
17	17	10%	230	61	750	198	1400	370
18	18	10%	220	58	700	185	1300	343
19	19	10%	210	55	650	172	1200	317
20	20	10%	200	53	600	159	1150	304
21	21	10%	190	50	580	153	1100	291
22	22	10%	180	48	560	148	1050	277
23	23	10%	175	46	540	143	1000	264
24	24	10%	170	45	520	137	950	251
25	25	10%	165	44	500	132	900	238
26	26	10%	160	42	480	127	870	230
27	27	10%	155	41	460	122	840	222
28	28	10%	150	40	440	116	820	217
29	29	10%	145	38	420	111	800	211
30	30	10%	140	37	400	106	780	206
31	31	10%	135	36	390	103	760	201
32	32	10%	130	34	380	100	740	195
33	33	10%	125	33	370	98	720	190
34	34	10%	120	32	360	95	700	185
35	35	10%	115	30	350	92	680	180

## 6.2 Filter Heads PURITY C 30% with Fixed By-Pass

German carbonate hardness °dH	Grains per US gallon	By-pass setting	Filter capacity					
			PURITY C50 Quell ST		PURITY C150 Quell ST		PURITY C300 Quell ST	
			Liters	US gallons	Liters	US gallons	Liters	US gallons
4	4	30%	1000	264	3000	793	6000	1585
5	5	30%	1000	264	3000	793	6000	1585
6	6	30%	850	225	2600	687	5000	1321
7	7	30%	750	198	2200	581	4000	1057
8	8	30%	650	172	1900	502	3600	951
9	9	30%	600	159	1700	449	3200	845
10	10	30%	550	145	1500	396	2900	766
11	11	30%	480	127	1400	370	2700	713
12	12	30%	450	119	1300	343	2500	660
13	13	30%	400	106	1200	317	2300	608
14	14	30%	360	95	1100	291	2100	555
15	15	30%	340	90	1000	264	1900	502
16	16	30%	320	85	950	251	1800	476
17	17	30%	300	79	900	238	1600	423
18	18	30%	280	74	850	225	1500	396
19	19	30%	270	71	800	211	1450	383
20	20	30%	250	66	750	198	1400	370
21	21	30%	240	63	700	185	1350	357
22	22	30%	230	61	670	177	1300	343
23	23	30%	220	58	640	169	1250	330



German carbonate hardness °dH	Grains per US gallon	By-pass setting	Filter capacity					
			PURITY C50 Quell ST		PURITY C150 Quell ST		PURITY C300 Quell ST	
			Liters	US gallons	Liters	US gallons	Liters	US gallons
24	24	30%	210	55	620	164	1200	317
25	25	30%	200	53	600	159	1150	304
26	26	30%	190	50	580	153	1100	291
27	27	30%	180	48	560	148	1050	277
28	28	30%	175	46	540	143	1000	264
29	29	30%	170	45	520	137	970	256
30	30	30%	165	44	500	132	940	248
31	31	30%	160	42	480	127	910	240
32	32	30%	155	41	460	122	880	232
33	33	30%	150	40	450	119	850	225
34	34	30%	145	38	440	116	820	217
35	35	30%	140	37	430	114	790	209

## Chlorine reduction

The PURITY C water filter system has been tested according to NSF/ANSI 42 for reduction of chlorine. The concentration of chlorine in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42. While testing was performed under standard laboratory conditions, actual performance of the system may vary.

Substance	Influent challenge concentration	Reduction Requirement	Actual average reduction
Chlorine	2.0 mg/L	50 %	94.8

## Capacity and Flow Rate Table based on Chlorine Reduction

Water filter system	PURITY C50 Quell ST	PURITY C150 Quell ST	PURITY C300 Quell ST
Capacity	3600 Liters/951 gallons	5400 Liters/1426 gallons	6300 Liters/1664 gallons
Rated service flow (lpm)	0.25 gallons/min	0.25 gallons/min	0.25 gallons/min

## 7 Repair

Regularly check the filter system for leaks. Regularly check the hoses for kinks. Bent hoses must be replaced.

The complete filter system must be replaced after 10 years.

**⚠ Caution:** Prior to changing, read the Technical Data (Chapter 9) and the Operating and Safety Information (Chapter 3).

Regularly clean the outside of the filter system with a soft, damp cloth.

**⚠ Caution:** Do not use any abrasive chemicals, cleaning solutions or astringent cleaning agents.

## 8 Troubleshooting

### 8.1 No water flow

Cause: Water intake closed.

Troubleshooting: Open the water intake at the upstream shut-off valve or by closing the locking handle ② on the filter head ①.

## 8.2 No or low water flow in spite of open water intake

Cause: Mains pressure too low.

Troubleshooting: Check mains pressure. If the fault continues, check the filter system and filter cartridge and change if necessary.

Cause: Filter head not mounted in direction of flow.

Troubleshooting: Dismantle filter head and install in direction of flow (Chapter 4).

## 8.3 Leak

Cause: Screwed connections not fitted correctly.

Troubleshooting: Check mains pressure. Check all screwed connections and mount according to Chapter 4. If the fault continues, exchange filter system.

## 9 Technical Data

		PURITY C Filter System with Filter Cartridge		
		PURITY C50 Quell ST	PURITY C150 Quell ST	PURITY C300 Quell ST
Operating pressure		2 bar – max. 8.6 bar (29 psi – max. 125 psi)		
Water intake temperature		4°C – 30°C (39°F – 86°F)		
Ambient temperature during	operation	4°C – 30°C (39°F – 86°F)		
	storage/transport	–20°C to 50°C (–4°F – 122°F)		
Nominal flow		60 l/h (15.9 US gallons/h)		
Pressure loss at nominal flow		0.25 bar (3.6 psi)		
Empty filter cartridge volume		1.0 l (0.3 US gallons)	1.9 l (0.5 US gallons)	2.9 l (0.8 US gallons)
Weight (dry/wet)		1.0 / 1.4 kg (2.2/3.1 lb)	1.7/2.5 kg (3.7/5.5 lb)	2.7/3.9 kg (6.0/8.6 lb)
Dimensions of filter system (filter head with filter cartridge) (Width/Depth/Height)		115/105/265 mm (4.53/4.13/10.42 inch)	115/105/421 mm (4.53/4.13/16.57 inch)	122.5/120/475.5 mm (4.82/4.72/18.72 inch)
Dimensions (filter cartridge) (Width/Depth/Height)		105/105/258,5 mm (4.13/4.13/10.18 inch)	105/105/414,5 mm (4.13/4.13/16.32 inch)	120/120/469 mm (4.72/4.72/18.46 inch)
Installed dimensions (vertical installation with wall mounting) (Width/Depth/Height)		130/119.5/265 mm (5.12/4.70/10.43 inch)	130/119.5/421 mm (5.12/4.70/16.57 inch)	130/127/475.5 mm (5.12/5.00/18.72 inch)
In addition to the accessories, the bending radii of the intake and outlet hose must be considered in addition to the dimensions of the complete system, depending on the installation orientation.				
Operating position		Horizontal or vertical		
Inlet connection		3/8" – 18 NPT		
Outlet connection		3/8" – 18 NPT		



System Tested and Certified by NSF International against NSF/ANSI Standard 42 for the reduction of Chlorine taste and odor.

The PURITY C Water Filter System is used to remove carbonate hardness (temporary hardness/alkalinity)\* from drinking water to prevent limescale deposits in downstream appliances. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Use cold water only. All of the materials used are safe for contact with drinking water. Observe relevant regulations. Read the manual prior to use.

\* Not performance tested or certified by NSF.

## 10 Order Numbers

### PURITY C Filter System

Article	Article Description	Article Number
PURITY C 30% 3/8" NPT filter head, pack of 20	Filter head with 30% by-pass (3/8" – 18 NPT connection)	1001452
PURITY C 30% 3/8" NPT filter head, pack of 3	Filter head with 30% by-pass (3/8" – 18 NPT connection)	1001451
PURITY C 0–70% 3/8" NPT filter head, pack of 20	Filter head with variable by-pass 0–70% (3/8" – 18 NPT connection)	1001449
PURITY C 0–70% 3/8" NPT filter head, pack of 3	Filter head with variable by-pass 0–70% (3/8" – 18 NPT connection)	1001450
PURITY C50 Quell ST filter cartridge, pack of 20	Filter cartridge to remove carbonate hardness and reduce contents in drinking water that impair odour and flavour.	1001395
PURITY C50 Quell ST filter cartridge, pack of 3		1001396
PURITY C150 Quell ST filter cartridge, pack of 6		1001391
PURITY C150 Quell ST filter cartridge, pack of 1		1001394
PURITY C300 Quell ST filter cartridge, pack of 3		1001397
PURITY C300 Quell ST filter cartridge, pack 1		1001398

### Accessories

Article	Article Description	Article Number
MAVEA carbonate hardness test	Test kit to measure the carbonate hardness of intake water	710801



**mavea**  
WATER TECHNOLOGY

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Information in the instruction for use subject to change

PN: 1001411-001/1001426-001